

# Our Goal: The Quantity and Quality of Critical Aquatic Habitat in Region 5, Including Wetlands, Will Be Maintained or Improved

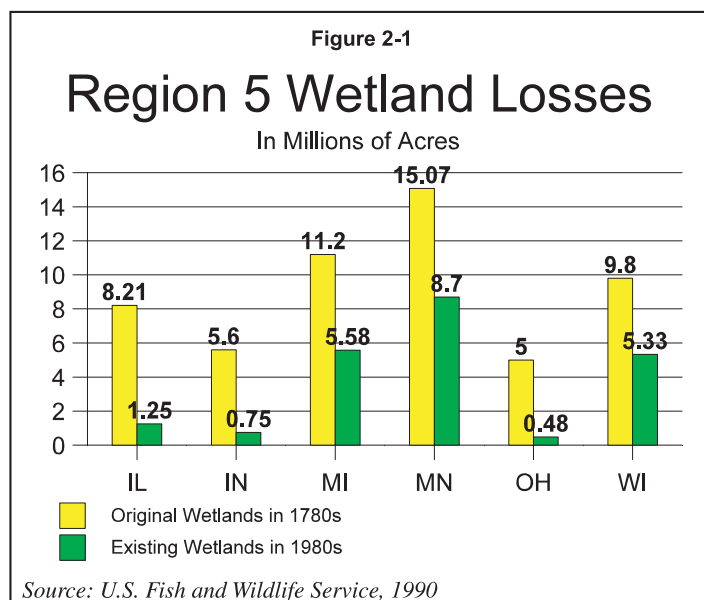


In Region 5, we have access to abundant water and spectacular rivers, streams and lakes. In addition to the resources that often come to mind when thinking of our region—the Ohio and Mississippi River, the Great Lakes and thousands of inland lakes—other unique and often critical habitats exist. Although this report does not address every type of critical aquatic habitat, it does provide information on two special types: wetlands and the shorelines of lakes and streams (also called riparian areas).

A wide variety of hydrologic and biological wetland types can be found in the Midwest, including marshes, swamps, bogs, wet meadows and more. Wetlands have increasingly been recognized for the valuable role they play in supporting biological diversity, maintaining valuable economic resources such as fisheries and acting as a natural method of flood control and some pollution removal. Maintaining shoreline habitat is also important for protecting surface waters from land erosion and associated water quality problems. Like wetlands, these buffer areas provide vital habitat for native species and increase the overall habitat value and water quality of the waters they surround.

Over the years, the Midwestern landscape has been altered by human activities. Land has been drained to create more suitable conditions for agriculture; and wetlands, shoreline habitat

and other open space have been increasingly subjected to the pressures of development. Total historical wetland losses range from 42 to 90 percent in the Region 5 states, with greater losses in the southernmost states. The Region 5 states have lost more wetland acreage than the national average. Many of the wetlands that remain are homes for rare species, in part because of habitat lost elsewhere. Likewise, the undeveloped shoreline along streams and lakes has decreased markedly.



## What Are the Major Problems Causing Impairments and Losses of Critical Aquatic Habitats?

Critical aquatic habitats can be lost directly by filling or draining of areas for development or by substituting walls or “manicured” landscaping for natural shorelines. Historically, the biggest losses of wetlands in the Midwest were the result of creating drainage for agriculture during projects conducted from the 1800s to the present. A drained wetland is not necessarily suitable for crops—it can be extremely productive, or it may not reliably produce a crop every year because of wetness. Ephemeral wetlands, or wetlands that

### Ephemeral Wetlands

Ephemeral wetlands are depressional wetlands that temporarily hold water in spring and early summer or after heavy rains. Periodically these wetlands dry up, often in mid to late summer. They are isolated, lacking a permanent inlet or outlet, but may overflow in times of high water. As such, they are important for flood control. Ephemeral wetlands are free of fish, which allows successful breeding of certain amphibians and invertebrates, and are important habitats for migrating birds. Even small sites of less than an acre can produce hundreds of frogs, toads and salamanders.

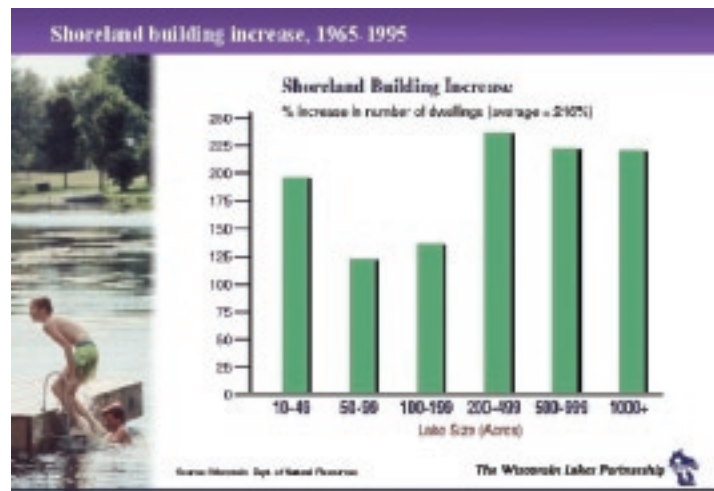
Many ephemeral wetlands have been drained and filled to facilitate agriculture, new subdivisions or other development. This not only eliminates aquatic habitat but also increases the risk of local flooding. Other ephemeral wetlands have been excavated to construct storm water retention ponds. Pollutants are often washed into these ponds during rainstorms.



Photograph by Michael R. Jeffords, EPA

dry up in summer, are at particular risk of being lost to agricultural and residential development (see inset). Figure 2-1 shows that many of the wetlands in the Region 5 states have been lost since the 1780s. Other reductions in habitat value can occur when waters are dredged or channelized for navigation, development or flood control purposes.

Figure 2-2



Shoreline development has also occurred over time but is increasing rapidly as our population grows and more people purchase waterfront property. New houses and other developments are expanding along lakes, rivers and wetlands, and existing seasonal cabins are renovated into year-round, often larger homes. Comprehensive figures are not available on shoreline development, but a study performed in Wisconsin shows that there has been an average 216 percent increase in the number of dwellings on lakes between 1965 and 1995 (see Figure 2-2).

Less obvious are the indirect causes of aquatic

Figure 2-3



habitat impairments, such as hydrologic changes, landscaping changes, poor land use practices and polluted runoff. Wetlands can be degraded or destroyed when they are dammed up or dug out to create deeper ponds and lakes and when water flow is diverted to or from wetlands.

The economic incentive to use the maximum amount of land on a farm or the desire to have a clear view of a lake or other water body over a manicured lawn often has led to elimination of natural vegetated buffers that normally surround a lake, stream or wetland. Studies have shown that there can be many species of plants and animals in the areas near the water's edge and that development measurably decreases the numbers and kinds of species present. For example, studies in both Wisconsin and Minnesota have shown correlations between loss of shoreline habitat and declines in various species. In Wisconsin, the number of green frogs declined rapidly with increased housing density (see Figure 2-3), and the composition of bird species changed markedly. The number of uncommon song birds, such as warblers and vireos, was higher on undeveloped land. In Minnesota, researchers found and mapped 897 crappie spawning nests and then compared the locations to shoreline developments. Only 24 of the 897 crappie nests were located near shoreline that had any type of dwelling on it.

Many wetlands in the Midwest also suffer from invasive plants such as purple loosestrife and reed canary grass that out-compete natural vegetation, greatly reducing the variety of vegetation types and the land's value to wildlife. Purple loosestrife, for example, displaces native wetland vegetation and disrupts the habitat essential for many wildlife species. Eventually purple loosestrife can overrun wetlands and almost entirely eliminate the open water habitat. The plant can also detract from recreational activities by choking waterways.

Finally, critical aquatic habitat can be impacted by pollution from point sources (such as wastewater treatment plant discharges) or from diffuse or nonpoint sources (such as runoff from agricultural areas or from urban or suburban areas). Wetlands in particular are impacted by runoff that can contain sediment, nutrients and chemicals from farm fields, animal waste and road salt, all of which decrease water quality. In addition, shoreline habitat can be impacted by sedimentation near the water's edge resulting from loss of vegetation and increased nutrient loads.

## What Are We Doing to Address the Problems?

Wetland losses have slowed down since the mid-1970s, in part because of the regulatory and educational activities of EPA and the states. However, resource protection programs have historically focused on single goals or a small set of goals that do not address the entire problem of wetland loss. EPA is now developing additional tools to assist in protecting Region 5's wetlands.

Section 404 of the Clean Water Act established

### Wisconsin's Wetland Program

Wisconsin has approximately 5.3 million acres of wetlands remaining from the 10 million acres that covered the landscape before European settlement. These remaining wetlands are critical to sustaining mammal, fish, amphibian and reptile habitat; to maintaining flood storage; to protecting surface water and groundwater quality; and to providing scenic beauty and recreation for boaters, hunters, wildlife watchers and others.

Since Wisconsin adopted wetland water quality standards in 1991, the wetland acreage lost under permits approved by USACE has slowed to 347 acres per year from 1,440 acres per year previously. Wisconsin's wetland standards now require people who want to pursue a project that potentially impacts a wetland to obtain Wisconsin Department of Natural Resources (WDNR) water quality certification before applying for a wetland permit from USACE. Applicants must demonstrate that they will make every effort to avoid harming wetlands and that any such harm will be minimized. No permit is issued if a project would result in significant harm to wetlands. A recent Supreme Court decision left many isolated wetlands across the country vulnerable to filling. Wisconsin became the first state in the nation to restore protection for such wetlands when the Wisconsin legislature passed and the governor signed legislation to protect Wisconsin wetlands.

To further reduce illegal filling of wetlands and to restore wetlands where feasible, WDNR recently developed a new strategy known as "Reversing the Loss." The strategy recognizes that 75 percent of Wisconsin's wetlands are in private ownership and that WDNR needs to provide landowners with the tools and means to manage their wetlands. This strategy charts a course for WDNR programs associated with wetland education, protection, restoration, enhancement and management to follow over the next 6 years.



a permitting program in 1972 to regulate discharges of dredged and fill materials into waters of the United States, and this program was later expanded to include wetlands. Activities regulated under this program include filling areas for development; water resource projects such as dam and sea wall construction; infrastructure development through construction of homes, highways and airports; and in some instances conversion of wetlands for farming and forestry. This program is jointly administered by the U.S. Army Corps of Engineers (USACE) and EPA. EPA reviews proposals to fill wetlands based on environmental criteria. These criteria stress that projects should avoid wetlands and waters to minimize their direct and indirect impacts on waters and to adequately compensate for any unavoidable impacts.

Using a combination of EPA and other funding, states, tribes and localities have strengthened their wetland protection programs, and some have become national leaders in using innovative approaches to protect their wetland resources. Michigan, for example, is one of only two states in the nation to have assumed responsibility for the Section 404 permitting program. Several midwestern states and some counties have stepped in to assert their legal role in protecting isolated wetlands in response to a Supreme Court ruling that restricted federal authority over these wetlands.

In addition to applying their traditional regulatory tools, Region 5 and the states are actively pursuing a Watershed Protection Approach to address water quality problems. EPA's and the states' traditional programs have succeeded in identifying and controlling the larger point sources of pollution such as industrial discharges to waterways. The traditional approach is especially effective for dealing with single dischargers or a localized problem. The watershed approach focuses more holistically on environmental resources and addresses problems that are more pervasive across the landscape, such as habitat destruction or diffuse sources of polluted runoff. EPA and the states are encouraging local resource managers to establish watershed plans that identify all problems impacting their resources and that integrate programs and tools for solving those problems. Among other things, EPA is developing guidance that more specifically identifies the need to link wetland protection programs to watershed planning efforts and is supporting a series of national and regional meetings on wetlands and

### Protecting Wetland in Wisconsin and Indiana Using Section 404 Programs

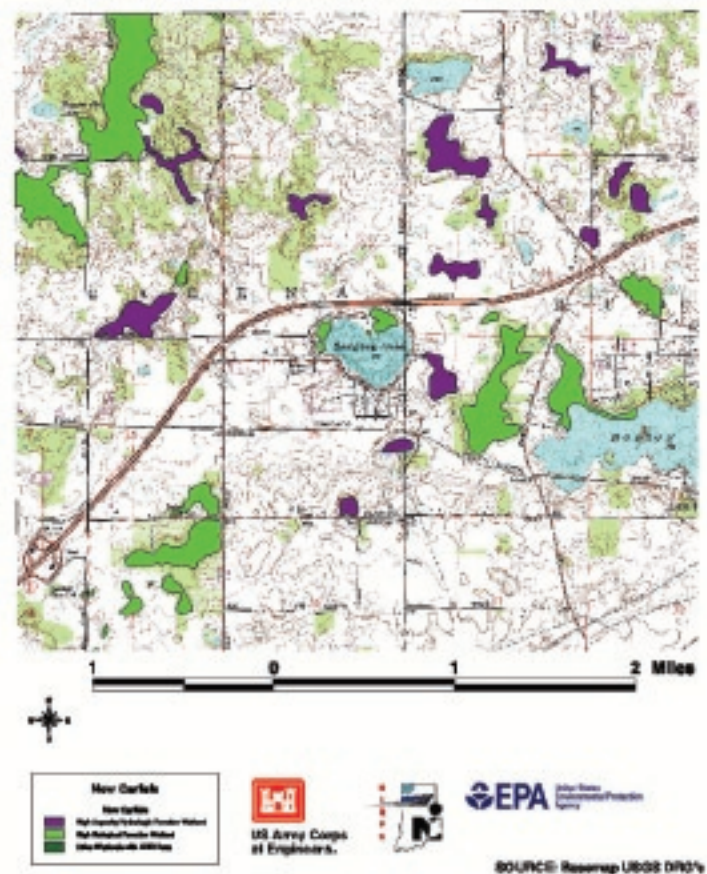
A site selected for the new Superior Middle School in Superior, Wisconsin, included 35 acres of high-quality wetlands containing four species of state-listed rare plants. The project was redesigned to reduce wetland filling to 24.7 acres and to shift impacts away from the most sensitive parts of the site. EPA continues to do advance planning with the City of Superior and with state and federal agencies in order to protect important wetlands in the city and ensure that effective compensatory mitigation projects, such as creating new wetlands, are conducted.

EPA also prosecutes violators of Section 404 of the Clean Water Act, especially in cases where unpermitted fill has been placed in wetlands. EPA recently settled a case against a recreation area in Indiana for placement of soil in a lake, river and wetland.

watershed planning.

EPA and USACE jointly conduct technical assistance projects to identify high-quality wetlands

**Figure 2-4**  
**Draft Northwest Indiana ADID Wetland Study**



## Ohio's Water Resource Restoration Sponsorship Program

Ohio EPA has developed an innovative way to finance restoration and protection of aquatic habitat resources. The Water Resource Restoration Sponsorship Program (WRRSP) allows recipients of loans for publicly owned treatment works from the Water Pollution Control Loan Fund (WPCLF) to sponsor a variety of habitat restoration and protection actions to benefit stream corridors and wetlands. These actions can be undertaken by park districts, land trusts or municipalities. The WPCLF reduces the interest rate for repayment of a treatment works loan by an amount sufficient to offset the cost for sponsoring aquatic habitat restoration and protection actions and to provide additional savings in the overall loan repayments for the sponsor. Through 2001, the WRRSP has provided more than \$21 million for 14 habitat restoration and protection projects in Ohio.

One WRRSP project was carried out to protect Sawmill Creek in Mansillon, Ohio. The Mill Creek Metroparks had a limited opportunity to acquire this undisturbed, biologically rich headwater stream before the property where it lies was sold to a developer. The property contains several wetlands along with Sawmill Creek, which is a tributary of the Meander Creek Reservoir, the drinking water source for the area. To meet the time line established by the property owner for the sale, the Trust for Public Land took out a WPCLF loan for the initial property acquisition and then entered into a lease and purchase agreement with the Metroparks. Subsequently, the City of Massillon used the WRRSP to obtain a WPCLF loan for its wastewater treatment plant improvements and to sponsor the Metroparks' purchase of the property from the Trust for Public Land. The WRRSP's involvement thus made it possible for the Metroparks to acquire and preserve an important water quality resource.

in advance of development. These projects aid local planning efforts and regulatory decision-making and most often occur in developing metropolitan areas. Region 5 has sponsored a number of such studies called Advance Identification (ADID) studies. The draft northwest Indiana ADID study has been made available to the public on a geographic information system web site (see figure 2-4). Another ADID study is being concluded for Kane County, Illinois, west of Chicago.

EPA is also promoting development of water quality standards designed specifically for wetlands. The Region 5 states are national leaders in adopting narrative water quality standards for wetlands. A more specific type of water quality standard can be developed through biological assessments using biologically based criteria; such a standard describes the qualities that must be present to support the desired aquatic life use of a water body. EPA assists many Region 5 states and tribes in developing biological criteria for their wetland types.

Along with development of water quality standards, EPA is working with the states to develop wetland monitoring programs that focus on documenting not only the quantity of wetlands (and gains and losses) but the also the quality of wetlands. Efforts are proceeding nationally to identify the critical elements of a wetland monitoring program, and within Region 5, a number of states are developing more complete monitoring programs. Michigan,

Minnesota, Ohio, and Wisconsin are all developing basic biological assessment programs for wetlands. For example, Minnesota has been working to develop appropriate tools for monitoring the quality of wetlands. Currently, the Minnesota Pollution Control Agency is conducting two biological assessment projects, one for depressional wetlands and one for riparian wetlands. Ohio is developing quantitative biological criteria to support its wetland standards. The state adopted wetland water quality standards in 1998. To implement those standards, Ohio is developing biological criteria for wetlands using plants, macroinvertebrates and amphibians as indices of biotic integrity. As part of this project, the state is working to describe

**Figure 2-5**





reference conditions for wetlands in its four main ecoregions, and this information will then be used as a goal for wetland mitigation projects.

For the most part, protection of shorelines does not fall under the regulatory authority of EPA, but both the national and state nonpoint-source control programs promote a number of practices that can help protect this valuable habitat. These practices include leaving buffers around the edge of waters, planting with native species, installing erosion control measures and limiting land-disturbing activities on the most sensitive sites. States also use other innovative mechanisms to protect critical habitat.

In addition, states and local governments may use voluntary measures or choose to regulate how development occurs. For example, Wisconsin passed a shoreline zoning ordinance (designated as "NR115") to manage the density of development along waters and to create buffers or keep them intact. Figure 2-5 shows where the Wisconsin ordinance applies: land within 1,000 feet of the ordinary high water mark (OHWM) of a navigable lake, pond or flowage and land that is within 300 feet of the OHWM of a navigable river or

stream, or from the landward edge of a floodplain if that is greater.

Finally, one major activity that is regulated nationally by EPA is runoff from construction that occurs on more than 1 acre of land. Such activity requires a permit, and developers must employ practices designed to minimize pollutant runoff, especially practices focusing on sediment. Minimizing soil loss near the water's edge is especially important because of the impact that excess sediment can have on aquatic habitat.

## Identifying Critical Ecosystems

Identifying areas that support ecosystems critical to the health of a region is an important but difficult task. Critical ecosystems are areas that are potentially the most important for retaining at least some of the natural heritage of the region. Currently, these ecosystems are identified using best professional judgment, and this judgment is rarely verified through a variety of other methods. The Critical Ecosystem Team in Region 5 used geographic information system technology and best professional judgement to create a database of critical ecosystems in the region. The regional map shown in Figure 2-6 was created by overlaying

### Whittlesey Creek Watershed in Wisconsin

The Whittlesey Creek Watershed project is designed to protect coastal wetlands and restore habitat in the watershed through involvement of both citizens and agencies. The project was initiated by the Bayfield County Land Conservation Committee using state nonpoint-source pollution funds. A plan for improving watershed health was developed. Since 1996, Wisconsin has provided over \$120,000 for cost-sharing with landowners to restore wetlands, replant critical habitat and stabilize eroding stream banks. Whittlesey Creek National Wildlife Refuge was established in 1999 to protect coastal wetlands and restore wetland and stream hydrology. Private landowners are given technical and financial assistance for habitat restoration projects that improve both aquatic and terrestrial community health in the watershed. State, federal and nonprofit organizations are working cooperatively to restore the native coaster brook trout to Chequamegon Bay and Whittlesey Creek. A fishery assessment of Whittlesey Creek was conducted in summer 2001 as a precursor to this restoration work. The U.S. Fish and Wildlife Service is offering to purchase conservation easements from landowners in the watershed to protect fish and wildlife habitat. Bayfield County and the U.S. Geological Survey are completing a hydrologic study of surface water and groundwater flows and of the effects of land use on those flows. The study results will help direct future habitat protection and restoration work.



Photograph Courtesy of WDNR

## Sugarloaf Cove: A Unique Restoration in Minnesota

An uncommon effort to restore a wetland on Lake Superior's north shore (near Schroeder, Minnesota) has had impressive results. A joint effort between the Minnesota Department of Natural Resources (MDNR) and the Sugarloaf Interpretive Center Association (SICA) restored coastal wetland and extensive upland areas at the Sugarloaf Point Scientific and Natural Area and on surrounding property owned and managed by SICA.

The site was used by Consolidated Paper to create log rafts bound for Ashland, Wisconsin, where they were loaded on railcars headed for inland paper plants. During the time the land was used for moving logs, low areas were filled, and much of the forest was cut so that buildings and roads could be constructed. When the paper company stopped using the site, most of the buildings were removed.

After being considered as a site for a safe harbor development, the Sugarloaf Point natural area was expanded, and the surrounding land came under the management of

the nonprofit SICA. Restoration of native plant communities is a priority both for SICA and for MDNR's Division of Ecological Services, which manages the natural area. Cooperation between MDNR and SICA as well as grant money from EPA's Great Lakes National Program Office allowed a thorough survey of remaining natural plant communities as well as a subsurface investigation beneath the fill placed on the wetland in the past. The results of these studies were used to carefully define restoration targets for both uplands and wetlands, and restoration began in earnest in 1999. Fill removed from the wetlands was used to restore upland areas such as an old road site.

The strong educational focus of SICA will ensure that the lessons learned in restoring wetland and upland plant communities on the shores of Lake Superior are available to residents and visitors alike. Tours and a slide show of the restoration project as well as an informational brochure may be obtained by contacting Terri Port Wright at (218) 879-4334 or via e-mail at [sugarloaf@qwest.net](mailto:sugarloaf@qwest.net).



Photograph by Patrick T. Collins, MDNR

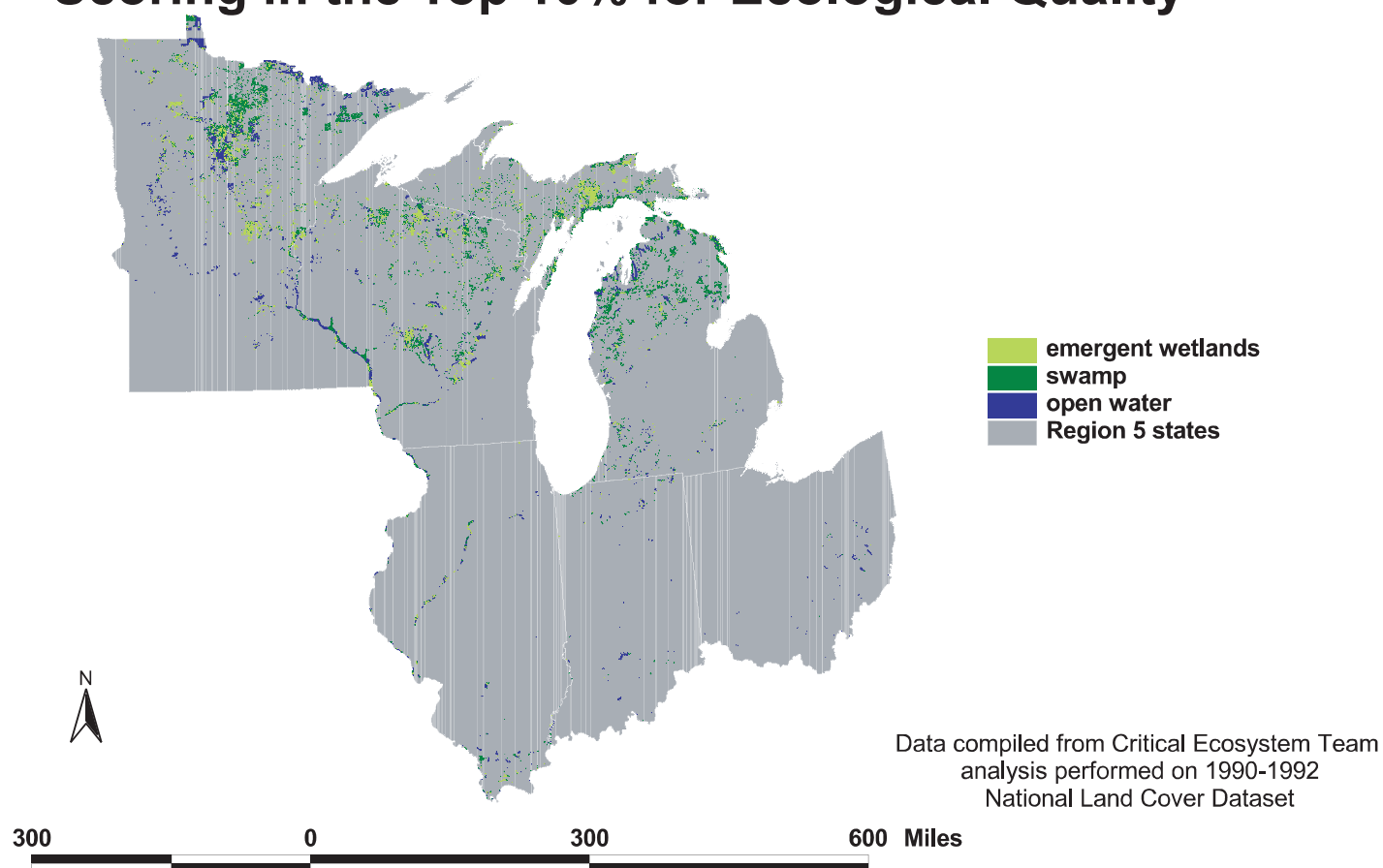
many different datasets that described ecological characteristics in three broad categories: diversity, sustainability and rarity. The resulting composite map indicates areas in Region 5 that support potentially critical ecosystems—those with high ecological diversity, many rare species and enough space to sustain the ecosystem. The mapping project will assist Region 5 and the states in protecting the region's invaluable aquatic habitat.

## Additional Data Sources

Visit the EPA Office of Waters, Oceans, and Wetlands web site at <http://www.epa.gov/owow> for more information on critical aquatic habitat, wetlands and polluted runoff control.

Figure 2-6

## Wetlands and Waters Within Ecosystems Scoring in the Top 10% for Ecological Quality



Source: EPA



**Great Blue Heron**  
Photograph by Don Breneman